XTRAMUS

NuTAP-R series

(NuTAP-R12G / NuTAP-R21G)

User Manual

USM V 1.0

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REVISION HISTORY

Date	FPGA Version	FW Version	USM Version	History
2008 1106	V1.0b00	v1.0b004	1.0	First version

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1. Introduction

1.1 General Description

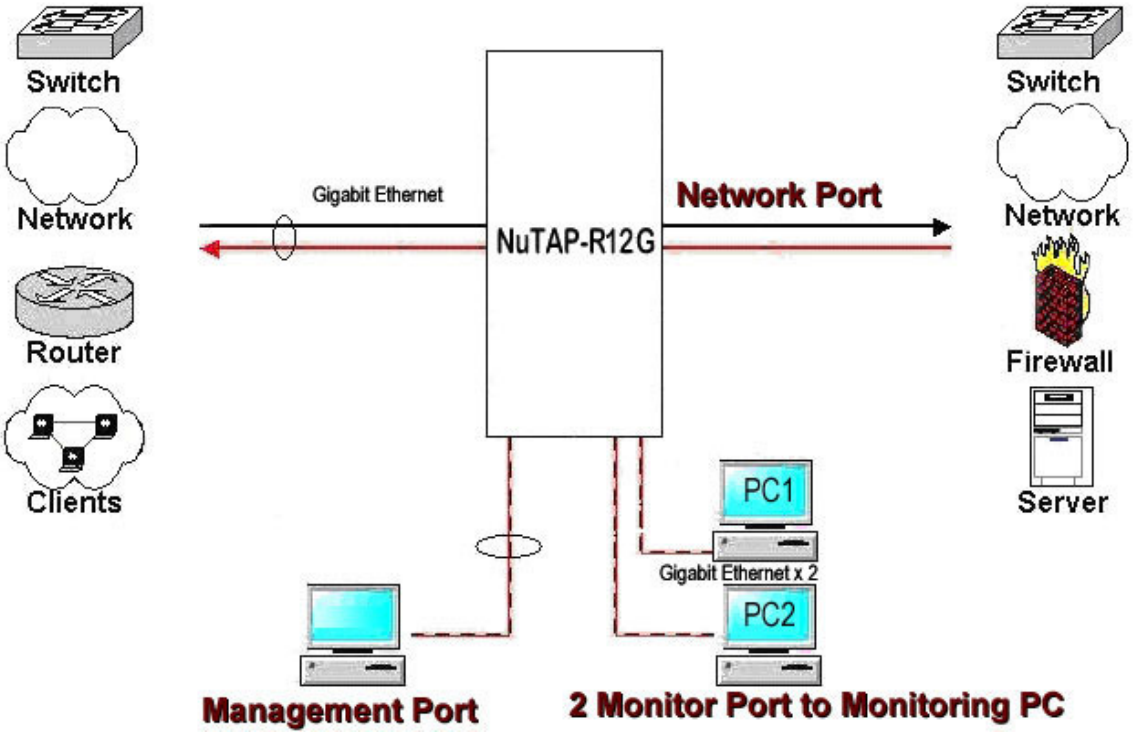
Xtramus **NuTAP-R series** is the only high-level product which has port aggregation function at present Network monitor market. **NuTAP-R series**, the high level segment and rackmount form factor of **NuTAP-R series**, is the first network surveillance equipment supporting Gigabit Ethernet after NuTAP series. Its surveillance network port which has 2 or 4 Combo interfaces can support wirespeed forwarding of 1 Gigabit Ethernet at the same time, Packet Capture, and
Packet Re-direction functions.

NuTAP-R series is embedded with 1 Gigabits high-speed memory and trigger module which can monitor 30 sets of networks per line. Those can let users set the network packets which need to be redirect by their own. Besides, the up to 60 sets of event counters on each surveillance line can provide as important data for network statistics, error detecting, analysis, monitoring and so on.

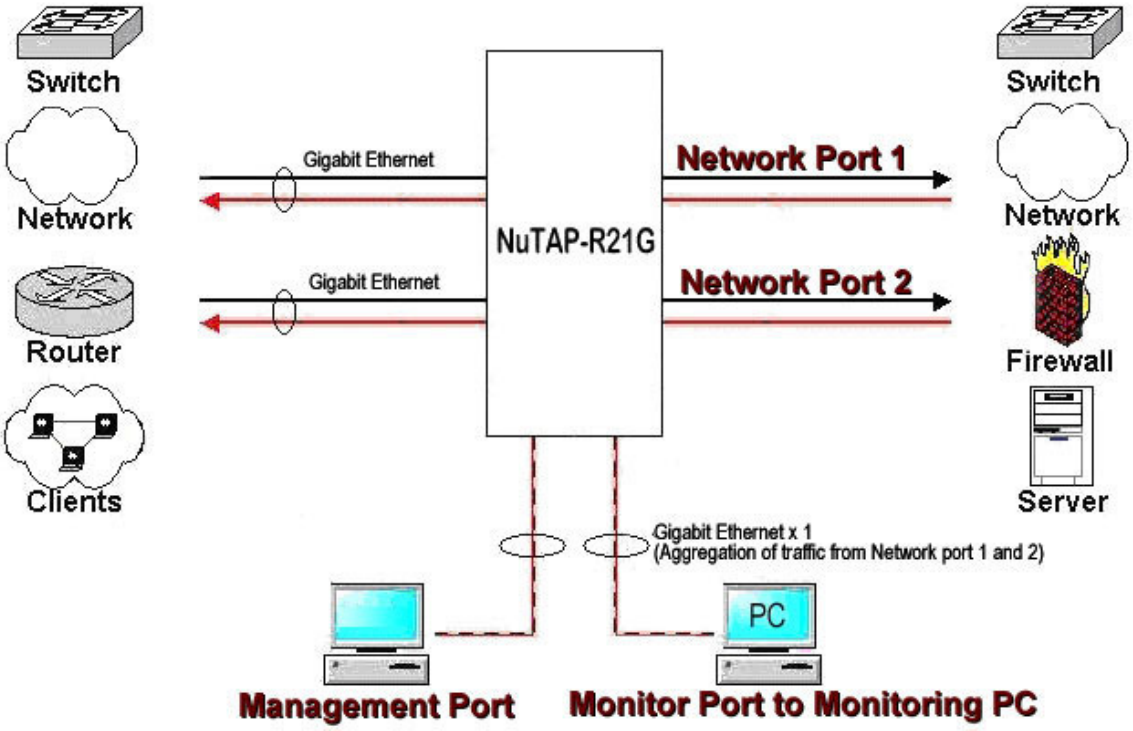
NuTAP-R series supports the operating mode of 10/100/1000M. It also has Relay function which can automatically switch to side band when there's no power supply. And plus the Redundant backup power system, we can assure you the best network connection. It will be a trustworthy network tap for UTP network.

1.2 Application Diagram

Here is an application diagram to display how NuTAP-R12G and NuTAP-R21G functions.



NuTAP-R12G Application Diagram

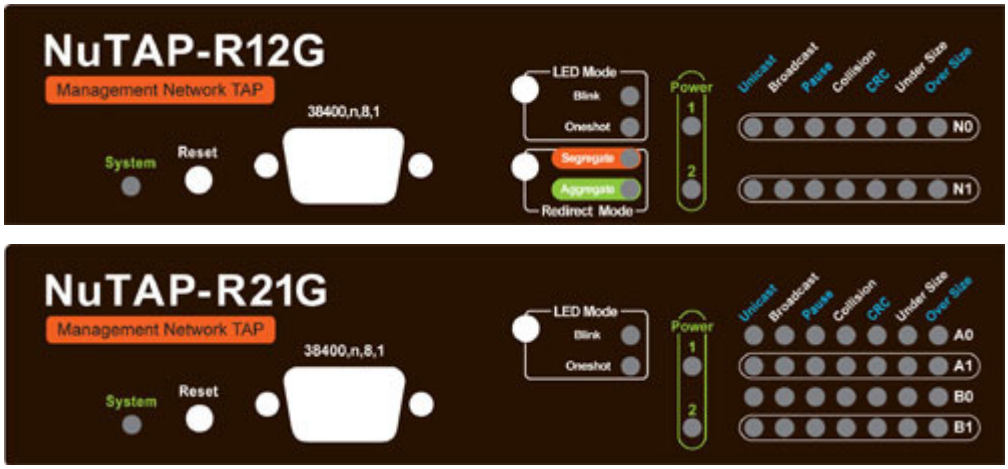


NuTAP-R21G Application Diagram

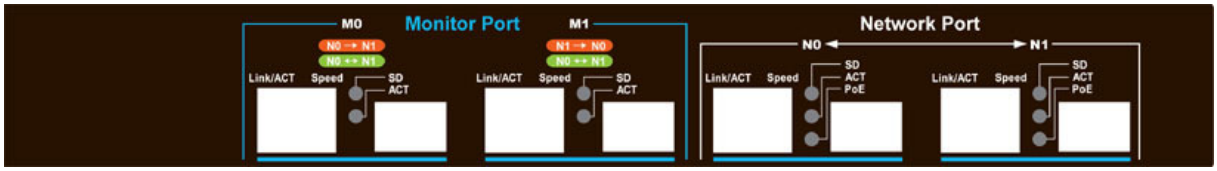
2. Function Description

2.1 Front Panel

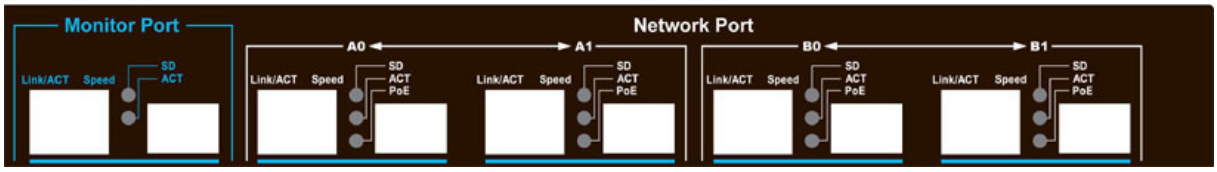
The front panel is illustrated in 2 separate parts as follows:



Left side of the front panel includes System LED, Reset button, console port (RS-232 DCE 38400), controlling buttons, Power LED and LED display.



NuTAP-R12G Right side



NuTAP-R21G Right side

Right side of the front panel includes monitor port (mirror function connection) and network ports (monitoring device connection). Each port acts as combo port with alternative media type of Copper (RJ-45) or Fiber (mini-GBIC).

2.2 Hardware Setup

Take NuTAP-R21G for hardware setup example.

Connect Device under Test 1 to port A0 and Device under Test 2 to port A1 with Cat-5 UTP

cables. Connect console port to COM 1 port and monitor port to PC network interface card for a third-party network monitoring software or professional analyzer such as NuStreams chassis from Xtramus. Connect the management port on the back of NuTAP-R21G to a CPU with UTP cable. At last, connect one end of the included power adapter to the power port and the other end into the power outlet.

Once all the connections are established, the LED of System, SD and Act will be on.

2.3 Control Buttons for LED

Button		Description
Reset		Invokes NuTAP-R Series to reboot.
LED Mode	Blink	Invokes LED to blink once when an error occurs.
	OneShot	Invokes LED to keep constantly on when an error occurs.
Redirect Mode*	Segregate	Invokes the function of Segregate.
	Aggregate	Invokes the function of aggregate.

*Redirect Mode just apply on the NuTAP-R12G model

The LED mode button determines LED to be displayed in blinking or steady light when an error occurs. In the Blink mode, LED will be flashing. In the OneShot mode, LED will always stay on unless Clear button is pressed.

The Redirect Mode button determines the packet traffic to be separate or combine to the Monitor port.

2.4 LED for General Status

Item	Status	Description
System	No light/ steady green light	Indicates CPU system is down.
	Blinking orange light	Indicates CPU system is being initialized.
	Blinking green light	Indicates CPU system is active.
	Alternate blinking orange/green	Indicates Firmware or FPGA is being upgraded.
Power	Steady green light	Indicates which group is in use.

2.5 LED for Ports

The LED indicators on the font panel are described in the table below:

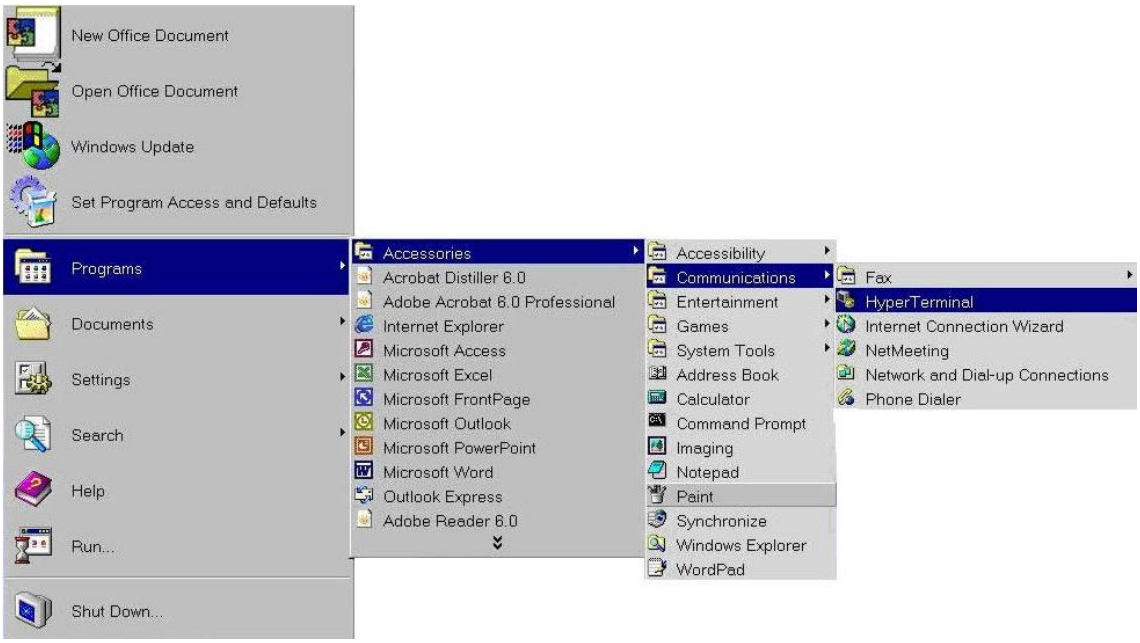
Item	Description
Unicast	Unicast transmission
Broadcast	Broadcast transmission
Pause	Pause packet
Collision	Packet collision
CRC	Packets with CRC error
Under Size	Undersized packets
Over Size	Oversized packets
SD	Symbol detector; successful link
Act	Active port
PoE	PoE equipment connected and actived.

3. Console Interface

3.1 Connecting the Console Port

Connect NuTAP-R series to a computer or a terminal for console interface for providing command–line access. Make sure to connect RS-232 cable to the console port of NuTAP-R series and connect the other end of the cable to a computer running terminal software.

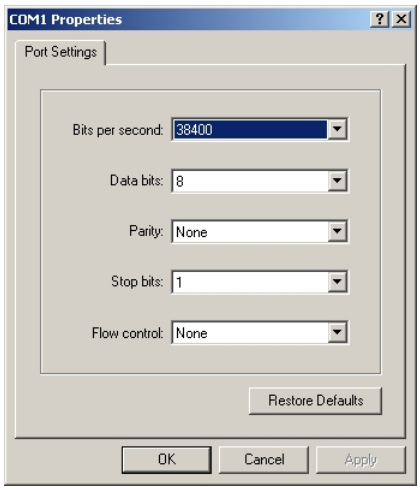
Follow the procedure to invoke Hyper Terminal.



Go to **Start**, press **Programs**> **Accessories**> **Communications**> **Hyper Terminal**.

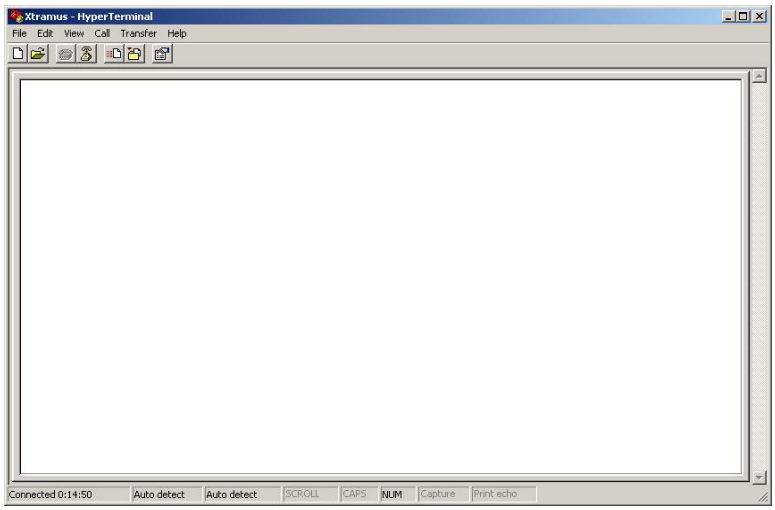
In the Connection Description window, enter a user name and click **OK**.

In the Connect To window, choose the appropriate serial port (COM 1 port or COM 2 port) and click **OK** button. The example here is COM 1 port.



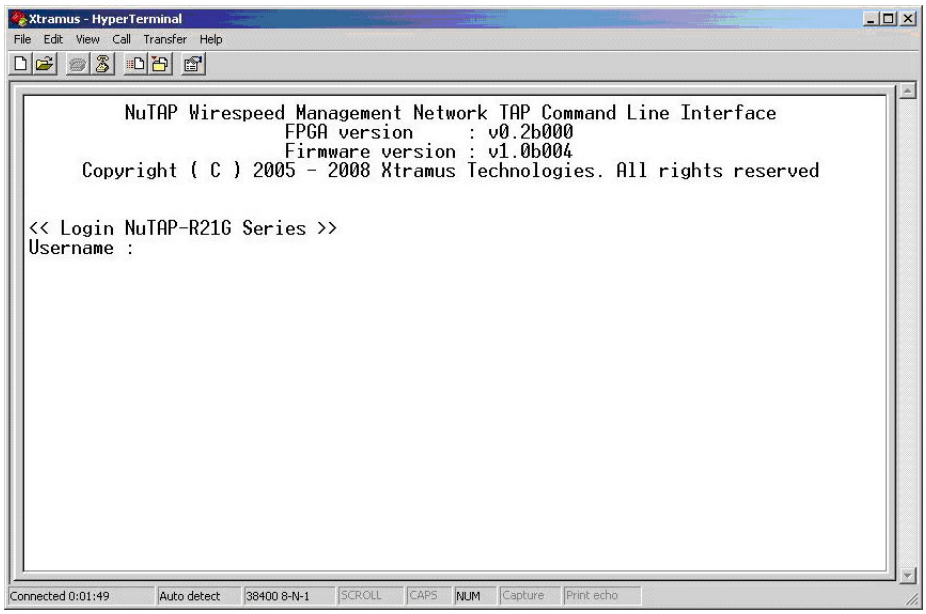
In the COM 1 Properties window, select 38400 baud for the data rate and then click **Apply** and then **OK** button.

Once Hyper Terminal is invoked, the console screen appears as below:



3.2 Login

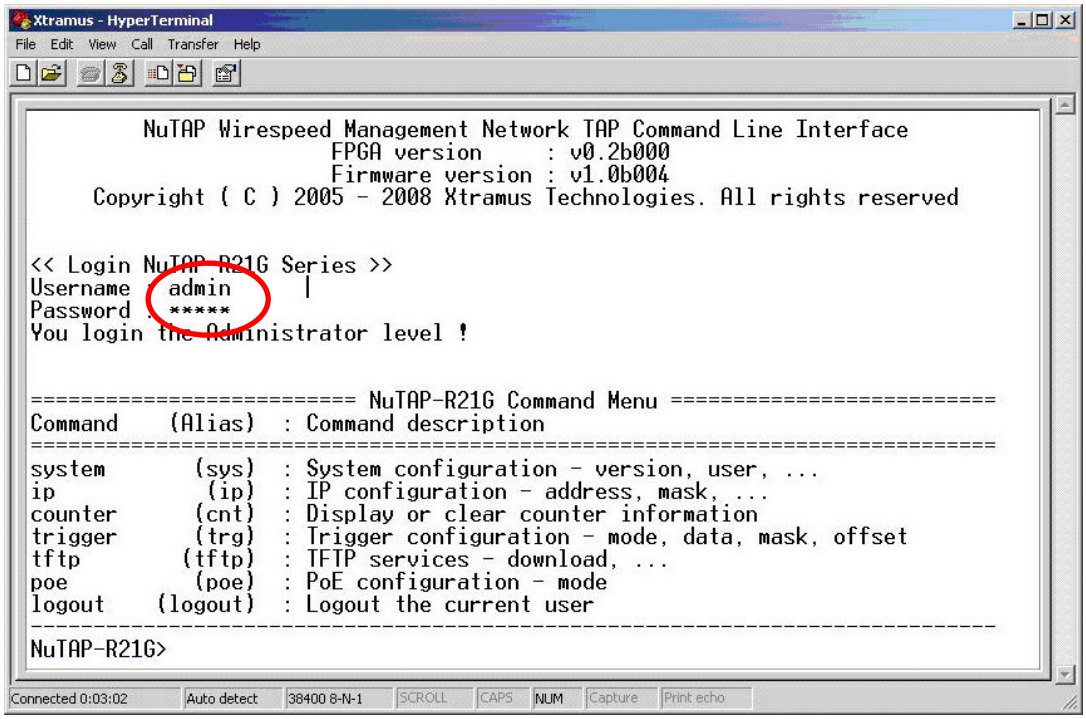
Press **Enter** key first to bring out the command prompt.



There are default user names and passwords. Users could log in using a predefined administrator-level user name and have the privileged access to the console's settings and configurations.

Type in "**admin**" and press **Enter** key. (For username)

Type in "admin" and press **Enter** key. (For default password, shown in * for confidentiality)



It is also available to use “guest” as user (default password: guest) to read console counter only.

3.3 Command

3.3.1 Command Menu

Command	Alias	Command Description
system	sys	System configuration- version, user, device name, group name, ping, idle time, save, reset and reboot
ip	ip	IP configuration- mode, address, mask and gateway.
counter	cnt	Display or clear counter information
monitor	mon	Monitor configuration- TAP or SPAN mode
trigger	trg	Trigger configuration- mode, condition, data and mask
tftp	tftp	TFTP services- offset and download/upgrade
logout	logout	Logout the current user

3.3.2 Command Description

3.3.2.1 System

```
=> user [show|admin|guest] [name|password] <name or password>
       => show
       Description : Show the current user setting.
       => admin or guest [name|password] <name or password>
       Description : Set username and password for 2 security level
                     (admin/guest).
=> devname <device name>
       Description : Set device name.
=> grpname <group name>
       Description : Set group name.
=> ping {-n <count>|-t} <ip address>
       Description : Ping function.
=> idletime [show|set]
       => show
       Description : Show the current timeout value.
       => set <minutes, 1~99999>
       Description : Set the telnet or web idle timeout value.
=> save
       Description : Save all current settings.
=> reset <static|dhcp>
       Description : Reset to factory default setting.
=> reboot
       Description : Reboot the system.
```

3.3.2.2 IP

```
Usage     : ip [Command] [Parameter]
[Command] : [show|mode|address|mask|gateway]
       => show
           Description : Show all ip information.
       => mode <static|dhcp>
           Description : Set 'static or 'dhcp' mode.
       => address <xxx.xxx.xxx.xxx>
           Description : Set ip address.
       => mask <xxx.xxx.xxx.xxx>
           Description : Set ip mask.
       => gateway <xxx.xxx.xxx.xxx>
           Description : Set ip gateway.
```

3.3.2.3 Counter

```
Usage     : cnt [Command] [Parameter]
[Command] : [show|page|set|clear]
       => show {vid}
              Description : Show all the RMON counters and link spped/duplex
                            status of all the ports.
              => vid
              Description : Show the VLAN counters.
       => page <enable|disable>
              Description : Set the counter display in page mode(enable) or
                            full screen mode(disable).
       => set <refresh time>
              Description : Set the counter refresh time(1~99 seconds).
       => clear </port=n,n1-n4|all>
              Description : Clear the counters of the assigned ports.
Port definition :
       Port A0 : port 1
       Port A1 : port 2
       Port B0 : port 3
       Port B1 : port 4
```

3.3.2.4 Monitor

```
Usage     : mon [Command] [Parameter]
[Command] : [show|mode]
       => show
              Description : Show monitor mode(tap/span) and the assigned ports
                            to be mirrored to the monitor port.
       => mode </port=n,n1-n4|all> <tap|span>
              Description : Set the monitor mode.
              ex. port1(A0) = tap, port2(A1) = span
              => the packets from port2(A1) CAN be forwarded to port1(A0)
                 the packets from port1(A0) CAN NOT be forwarded to port2(A1)
                 the packets from port1(A0) and port2(A1) will be mirrored to
                 the monitor port
Port definition :
       Port A0 : port 1
       Port A1 : port 2
       Port B0 : port 3
       Port B1 : port 4
```

3.3.2.5 Trigger

```
Usage     : trg [Command] [Parameter]
[Command] : [show|logic|mode|cond|data|mask|offset],n1-n4|all> </trig=n,n1-n10|a
       => show
            Description : Show all the trigger settings.tion : Set the trigger
       => logic </port=n,n1-n4|all> <AND|OR>

            Description : Set the trigger logic(AND/OR).

       => mode </port=n,n1-n4|all> </trig=n,n1-n10|all> <enable|disable>
Port definition :
       => cond </port=n,n1-n4|all> </trig=n,n1-n10|all> <match|unmatch> 2
```

```
                          condition(match or unmatch).
            trigger formula : (trig1-match or trig1-unmatch) AND/OR
                              (trig2-match or trig2-unmatch) AND/OR ...
                              (trig10-match or trig10-unmatch)
            ex. If the trigger logic is AND, /trig=1 match /trig=2 unmatch :
                the packets match the trigger1 AND don't match the trigger2
                will be mirrored to the monitor port.
       => data </port=n,n1-n4|all> </trig=n,n1-n10|all> <xxxxxxxxxxxx>
            Description : Set the trigger data pattern. Data is a hex number,
                          range : n1-n8 = 1-4 bytes. ex:12345678
                          range : n9-n10 = 1-6 bytes. ex:abcdef123456
       => mask </port=n,n1-n4|all> </trig=n,n1-n10|all> <xxxxxxxxxxxx>
            Description : Set the trigger mask. Mask is a hex number,
                          range : n1-n8 = 1-4 bytes. ex.ffffffff
                          range : n9-n10 = 1-6 bytes. ex:ffffffffffff
       => offset </port=n,n1-n4|all> </trig=n,n1-n10|all> <ddddd>
            Description : Set the trigger offset. Offset is a decimal number,
                          range = 0-16383.
Port definition :
       Port A0 : port 1
       Port A1 : port 2
       Port B0 : port 3
       Port B1 : port 4
```

3.3.2.6 TFTP

```
Usage     : tftp [Command] [Parameter]
[Command] : [server|download]
       => server [show|set]
            => show
            Description : Show the tftp server ip address.
            => set <xxx.xxx.xxx.xxx>
            Description : Set the tftp server ip address.
       => download firmware <file name>
            Description : Download the firmware code.
       => download fpga <file name>
            Description : Download the fpga code.
```

3.4 Command Lines

3.4.1 System (sys)

sys show

sys user show

sys user admin name **** (range: 1~32 bytes; default: admin)

sys user admin password **** (range: 1~32 bytes; default: admin)

sys dvname **** (change device name; range: 1~32 bytes; default: NuTAP-R21G)

sys grpname **** (change group name; range: 1~32 bytes; default: MIS)

sys ping ***.***.*.* (ping IP address)

sys idletime show

sys idletime set * (set refresh time; range: 1~99,999 minutes; default: 5)

sys save (save configurations)

sys reset (reset to factory default values)

sys reboot (reboot the system)

3.4.2 IP (ip)

ip show

ip mode static (or dhcp)

ip address ***.***.***.***

ip mask ***.***.***.***

ip gateway ***.***.***.***

3.4.3 Counter (cnt)

cnt show

cnt show vid (run VLAN counters)

cnt page enable (or disable)

cnt set * (counter refresh time; range= 0~99 seconds)

cnt clear /port= * (or /port=*-* or / port=all)

3.4.4 Monitor (mon)

mon show

mon mode /port=* span (or tap; default: tap)

3.4.5 Trigger (trg)

trg show

trg logic /port=* and (or or)

trg mode /port=* /trig=* enable (or disable; default: disable)

trg cond /port=* /trig=* match (or unmatch)

trg data /port=* /trig=* ********** (DA value; Trigger1~8:1~4 bytes; Trigger 9~10:1~6 bytes)

trg mask /port=* /trig=* ********** (SA value; Trigger 1~8: 1~4 bytes; Trigger 9~10:1~6 bytes)

3.4.6 TFTP (tftp)

tftp offset /port=* /trig=* * (trigger offset value; range: 0~16,383; default: 0)

tftp server show

tftp server set ***.***.***.*** (server IP; default: 192.168.1.254)

tftp download firmware *.bin (file name)

tftp download fpga *.bin (file name)

3.4.7 Logout (logout)

4. Counter

4.1 Console Counter

There are total three (3) pages for Console Counter.

4.1.1 General Items at Page Bottom

General items of the Console Counter are described in the table below:

Item	Description
Monitor Port	Media Type of Monitor Port
Packets Forwarded	Number of packets received by Monitor Port.
<C>: Clear Counters	Press C key to clear the console counter.
<S>: Stop/Start Screen	Press S key to stop or start the console counter.
<P>: Page Switch	Press P key to select pages.
<ESC>: Exit	Press ESC key to exit console counter

4.1.2 Page 1

The items on Page 1 of the Console Counter are described in the table below:

Item	Description
Rx	Number of packets received.
Tx	Number of packets transmitted.
Coll	Number of collision packets received.
CRC	Number of packets with CRC error (incorrect FCS checksum) received.
Align	Number of packets with alignment error (packets with FCS Checksum error and 1 nibble less than setup length) received.
Drib	Number of packets with dribble error (packets with correct FCS Checksum but having an additional 1 nibble attached.) received.

OverC	Number of oversized packets (longer than 1518 bytes) received.
UnderC	Number of undersized packets (shorter than 64 bytes) received.
BC	Number of broadcast packets received.
MC	Number of multi-cast packets received.

4.1.3 Page 2

The items on Page 2 of the Console Counter are described in the table below:

Item	Description
P64C	Number of packets received in length of 64 bytes.
P65C	Number of packets received in length between 65 and 127 bytes.
P128C	Number of packets received in length between 128 and 255 bytes.
P256C	Number of packets received in length between 256 and 511 bytes.
P512C	Number of packets received in length between 512 and 1023 bytes.
P1024C	Number of packets received in length between 1024 and 1518 bytes.
RxByte	Total byte count during receiving process.
Pause	Number of packets received with Pause Control.
VLAN	Number of packets received with VLAN Tag.
Trig1	Number of packets received with 1st Trigger configuration.

4.1.4 Page 3

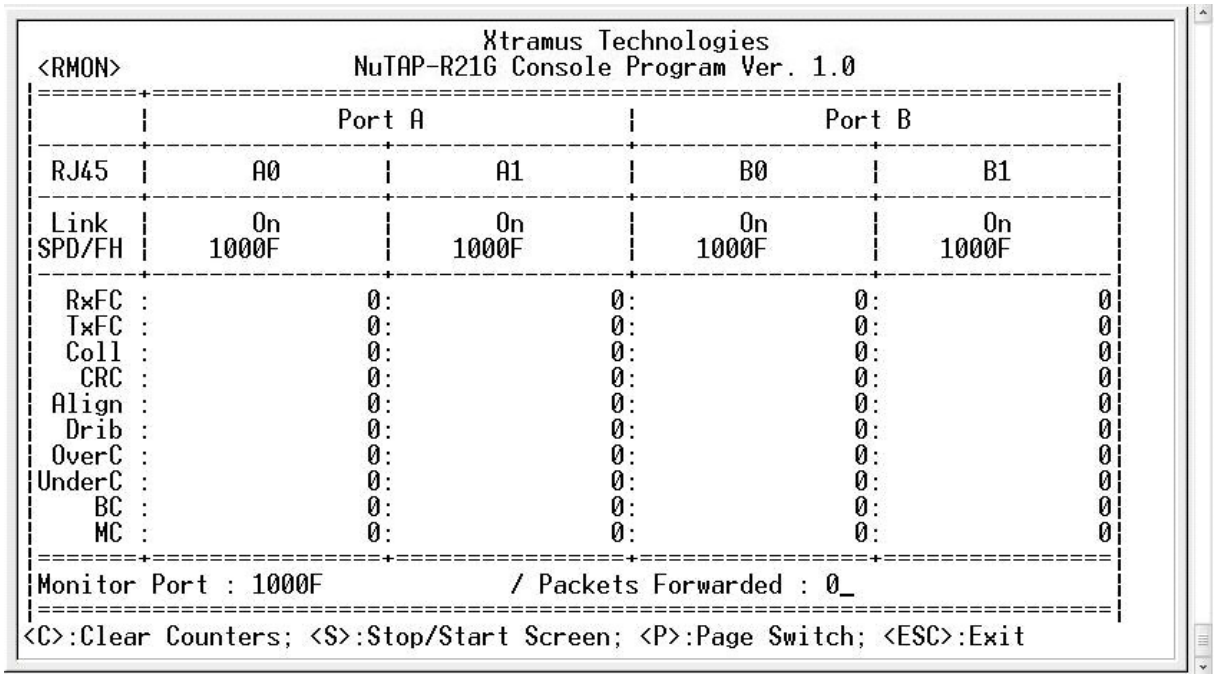
The items on Page 3 of the Console Counter are described in the table below:

Item	Description
Trig2	Number of packets received with 2nd Trigger configuration.

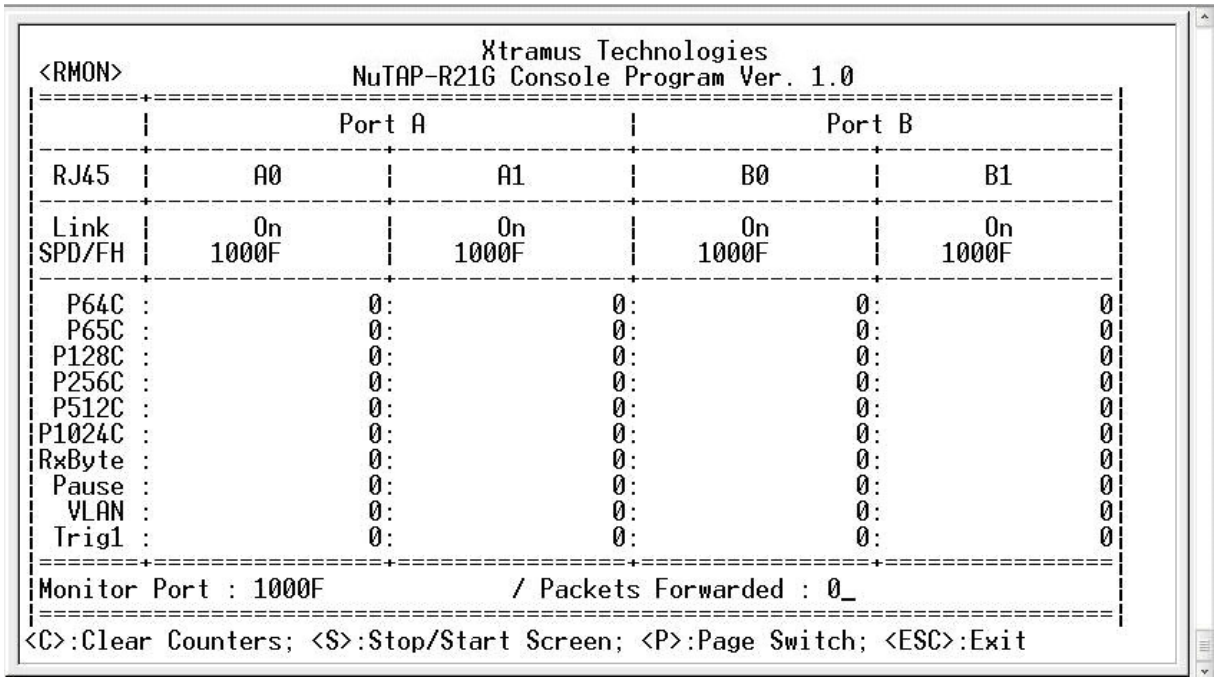
Trig3	Number of packets received with 3rd Trigger configuration.
Trig4	Number of packets received with 4th Trigger configuration.
Trig5	Number of packets received with 5th Trigger configuration.
Trig6	Number of packets received with 6th Trigger configuration.
Trig7	Number of packets received with 7th Trigger configuration.
Trig8	Number of packets received with 8th Trigger configuration.
Trig9	Number of packets received with 9th Trigger configuration.
Trig10	Number of packets received with 10th Trigger configuration.
FrRate	Transmission rate of utilization in percentage.

4.2 Counter Reading

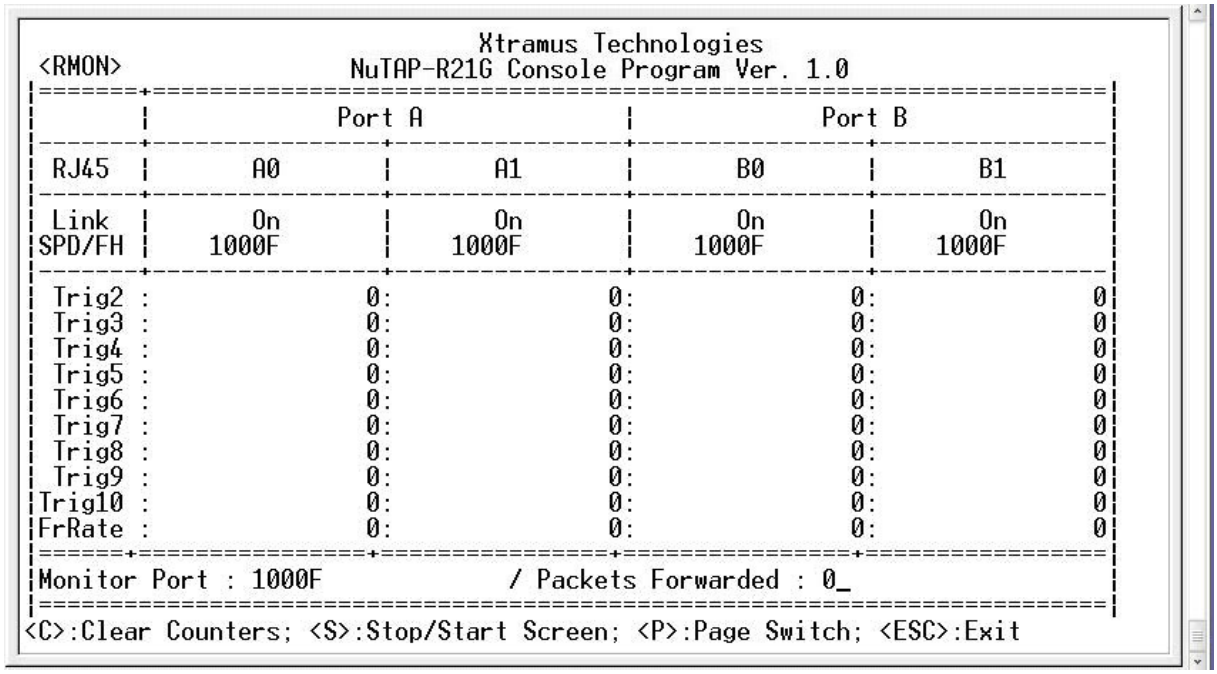
4.2.1 Page 1



4.2.2 Page 2



4.2.3 Page 3



5. Management WEB Interface

User can regulate the setting of NuTAP-R series, such as Filter setting, PoE, or Upgrade process via Management WEB Interface of the NuTAP-R series.

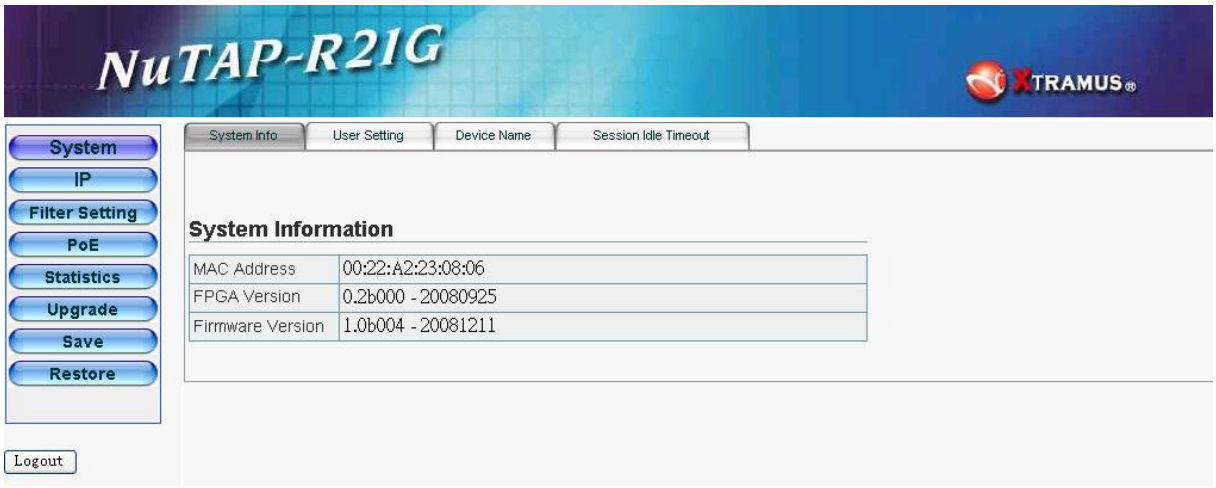
5.1 Connection

User connects the PC to the management ports on the back of NuTAP-R series with network cable before enter the web interface.

The management web interface is operated on the web browser that user must keyin the original IP setting" **192.168.1.6**" on the WEB browser to enter the login page. The factory setting of the User ID and Password is **"admin"**

5.2 Function

There are 8 function items in the management web interface:" System", " IP", " Filter Setting", "PoE", " Statistics", "Upgrade", "Save", and "Restore"



5.2.1 System

This item will display the system information, user login setting (user setting), device name, and the idle timeout setting of NuTAP-R series. The system will logout automatically when user doesn't active over the time defined in the "session Idle Timeout".

5.2.2 IP

User can setup the IP connection type, IP address, subnet mask, and gateway. The factory setting of the IP is 192.168.1.6 with Static type.

5.2.3 Filter Setting

User can configure the filter of NuTAP-R series via the item of "Filter Setting". The setting has two different types: By Port and By Trigger.

5.2.4 PoE

NuTAP-R series support two type of PoE: Mode A (Pair 1236) and Mode B (Pair 4578). User can select the suitable mode in this function item.

5.2.5 Statistics

User can check the monitor result by port in this function item and setup the refresh frequency of the counter data display via the" Counter Refresh Interval".

5.2.6 Upgrade

NuTAP-R series can be upgraded Firmware and FPGA via this function item. User must download the Firmware or FPGA in the management PC first and setup the TFTP server IP as the user's Ethernet card IP.

5.2.7 Save

User can save the configuration in this function item.

5.2.8 Restore

User can reset the setting to the factory setting via this function item.

6. Specifications

NuTAP-R12G：1-Channel Ethernet Management TAP	
Interface	Network Port：1 pair x 10/100/1000 Mbps Ethernet with 1 x RJ-45 and 1 x Mini-GBIC combo ports Monitoring Port：2 x 10/100/1000 Mbps Ethernet with RJ-45 and Mini-GBIC combo ports Console Port：1 x RS-232 with DB-9 connector Management Port：1 x 10/100 Mbps RJ-45 port
Inlet Power	AC in 90~ 240 V; 50~60 Hz DC 48V(Exclusive option)
Power Consumption	7.5 ~ 13 Watt
LED Display	Status: System, Blink/Oneshot, Speed, Link/ACT, SD, Tx, Rx Counters: Unicast (UC), Broadcast (BC), Pause, Collision, CRC Error, Undersize (US), Oversize (OS),
Dimensions	442 mm x 240 mm x 43 mm
Temperature	Operating： 0~ 40 ℃ (32~ 104 ℉) Storage：0~ 50℃(32~ 122℉)
Humidity	Operating： 0 ~ 85% (non-condensing) Storage： 0 ~ 85% (non-condensing)

NuTAP-R21G： 2-Channel Ethernet Management TAP	
Interface	Network Port： 2 pairs x 10/100/1000 Mbps Ethernet with 1 x RJ-45 and 1 x Mini-GBIC combo ports Monitoring Port： 1 x 10/100/1000 Mbps Ethernet with RJ-45 and Mini-GBIC combo ports Console Port： 1 x RS-232 with DB-9 connector Management Port： 1 x 10/100 Mbps RJ-45 port
Inlet Power	AC in 90~ 240 V; 50~60 Hz DC 48V(Exclusive option)
Power Consumption	7.5 ~ 13 Watt
LED Display	Status: System, Blink/Oneshot, Speed, Link/ACT, SD, Tx, Rx Counters: Unicast (UC), Broadcast (BC), Pause, Collision, CRC Error, Undersize (US), Oversize (OS),
Dimensions	442 mm x 240 mm x 43 mm
Temperature	Operating： 0~ 40 ℃ (32~ 104 ℉) Storage：0~ 50℃(32~ 122℉)
Humidity	Operating： 0 ~ 85% (non-condensing) Storage： 0 ~ 85% (non-condensing)